eleven American universities, and four Australian universities have been communicated with. It was resolved to elect a committee to formulate recommendations as to what should be done to help to develop the residential system. It was decided also to extend the scope of the constitution of the congress so as to include delegates from the universities of Ireland as well as of England and Wales, and to invite universities of Scotland also to send representatives annually.

IT is announced that Mr. J. D. Rockefeller has given 2,000,000*l.* to the General Educational Board, a body incorporated by a recent Act of Congress for the purpose of promoting education in the United States, and the income is to be used for the extension of higher education in the United States. Mr. Rockefeller has also presented 200,000*l.* to Yale University. It is stated the gift to the Educational Board is to be held in perpetuity, and the income, after payment of administrative expenses, is to be used for the benefit of such institutions as the Board may select for periods, in amounts, for purposes, or on conditions to be determined by the Board, which may also employ the income in such other ways as it may deem best adapted to promote a comprehensive system of education in the United States. The income is to be used without distinction of locality, and its use is to be confined to higher education. It is designed especially for colleges as distinguished from the great universities, although there is no prohibition of grants to universities. The benefits of the donation are to be open to all, although the fund cannot be employed for giving specifically theological instruction. The fund may be used for endowment, for building, for paying off debts, or meeting current expenses.

THE report for the year 1904 of the council to the members of the City and Guilds of London Institute has been received. We notice that the number of university students attending the Central Technical College continues to increase, and that more than 110 such students are in attendance during the current session. At the last degree examination in engineering for internal students of the university, open to all engineering schools in London, eleven degrees in all were conferred, and of these eight were obtained by this college. The total number of students in the college during 1904 was 409, as compared with 304 in the preceding year. This increase in number of the students has made it necessary to provide an increase in the teaching staff, and the appointment of five new assistants has been sanctioned at a cost in salaries of 800*l.* a year. The council, in their last report, announced the steps which had been taken towards the extension of the building of the Technical College at Finsbury. Since then the plans of the new building have been approved, a tender accepted, the foundations excavated, and the building begun. In settling the details of the plans and on the question of the equipment of the new building, the committee had the benefit of the advice of Sir William White, K.C.B., F.R.S. The work of the department of technology of the institute continues to increase with the growing demand for instruction in the application of science and art to specific industries and trades. There are two directions in which, in the opinion of the council, improvements might be effected in the technical education of artisans. First, in the preparation of students before entering upon their courses of evening technical instruction, and secondly, in the standard of qualifications of the teachers nominated by local authorities to give such instruction. It is satisfactory to find that in the different branches of technology the number of students registered as attending classes in the United Kingdom was 41,089, as compared with 38,638 in the previous year. The report as a whole is an excellent record of a substantial year's work.

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, June 7.—Mr. F. Merrifield, president, in the chair.—An earwig, *Apterygida arachidis,* Yers., found by Mr. Annandale, of Calcutta, in a box of specimens received from the Andaman Islands: M. **Burr.** When placed in a small box the earwig was alone, but next morning there were five larvæ present; two disappeared, apparently being consumed by the parent, and the remaining three were those exhibited. Mr. Burr also showed a locustid of the family Pseudophyllidæ, taken in Queensland by Mr. H. W. Simmonds among twigs and plants which it greatly resembled, together with a photograph of the insect in its natural position.—(1) Three examples of *Gnorimus nobilis,* L., taken at Woolwich on May 20 last under the bark of an old dead cherry tree, a beetle supposed to be becoming extinct in Britain; (2) a malformed specimen of *Lochmaea suturalis* which had the left posterior tibia bifid for about one-third of its length, and two tarsi, one of which had the joints considerably enlarged: E. C. **Bedwell.**—A living specimen of *Omophlus betulae,* Herbst, a beetle not known to occur in Britain, found near Covent Garden, and probably imported: O. E. **Janson.**—One ♂ and three ♀♀ of *Agrion armatum* taken this year by Mr. F. Balfour Browne, and sent to the exhibitor alive: W. J. **Lucas.**—Four specimens of the rare *Acrognathus mandibularis,* Gyll, captured on the wing towards sunset near Woking at the end of May: G. C. **Champion.**—Two aberrations of *Biston hirtaria,* Cl., both females, taken at rest on tree-trunks at Mortehoe, North Devon, April 23: Selwyn **Image.** The first aberration was tolerably normal in general coloration, but the anterior half of the fore-wings was much suffused with fuscous, and at the costa was broadly emphasised with rich black. The second aberration was semi-transparent black all over both fore- and hind-wings, the veins strongly delineated with black, powdered with ochreous.—Empty pupa-cases of *Zonosoma pendularia* demonstrating the wide variation of methods in the placing of the silken girth round the pupa: W. J. **Kaye.**—Leaves of strawberry, *Berberis japonica,* and cherry-laurel which had been attacked by a minute fungus—in the case of the Berberis identified by Prof. S. H. Vines as *Phyllosticta japonica,* Thnem.: Prof. E. B. **Poulton.** The attack was local, leaving a roundish or oval window outlined with brown, sometimes in the form of a narrow line, sometimes spreading peripherally into the leaf for a greater or less distance. In the strawberry leaves the edges of the windows were somewhat ragged, but those of the other two leaves had smooth contours, and resembled strikingly the oval transparent areas upon the fore-wings of *Kallima inachis, K. paralekta,* &c. Prof. Poulton had believed that these "windows" of Kallima represented holes gnawed by larvæ, and that the altered marginal zone reproduced the effect of the attacks of fungi entering along the freshly exposed tissues of the edge. But he now desired to withdraw his earlier hypothesis in favour of the more probable and convincing suggestion made by Mr. Grove.—Photograph of the fungus-like marks on the wings of the Oriental Kallimas: Prof. **Poulton.**—The variability of the genitalia in Lepidoptera: Dr. Karl **Jordan.**—Scents in the male of Gonepteryx: Dr. G. B. **Longstaff.** It was mentioned that whereas in *G. cleopatra* ♂ the odour was strong, the author had been unable to detect any appreciable fragrance in *G. rhamni* ♂. Such a difference, he said, seemed to imply a physiological difference of the two forms pointing to specific distinction. Dr. F. A. Dixey, in connection with Dr. Longstaff's observations, exhibited and explained the several forms of Gonepteryx occurring in the Palæarctic region.—The geographical affinities of Japanese butterflies: H. J. **Elwes.** Summing up his remarks, the author said that during the winter and spring months the plants and insects of Japan were, like the climate, Palæarctic in character, yet during the summer and autumn they were tropical.—New African Lasiocampidæ in the British Museum: Prof. C. **Aurivilius.**—Memoir on the Rhynchota taken by Dr. Wyllie chiefly in Beira and Lifù: G. W. **Kirkaldy.**

Chemical Society, June 14.—Prof. R. Meldola, F.R.S., president, in the chair.—Influence of various sodium salts on the solubility of sparingly soluble acids: J. C. **Philip.**—The dielectric constants of phenols and their ethers dissolved in benzene and *m*-xylene: J. C. **Philip** and Miss D. **Haynes.**—Synthesis by means of the silent electric discharge: J. N. **Collie.** The facts of special interest are that ethylene under the influence of the silent electric discharge at the ordinary temperature will unite with carbon

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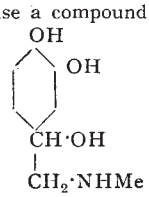
monoxide, and will also polymerise, yielding a series of complicated hydrocarbons; the chief substances formed boil at about 150°–160°, and apparently approximate in composition to $C_{10}H_{20}$.—The ultra-violet absorption spectra of aromatic compounds, part i., benzene and certain mono-substituted derivatives: E. C. C. **Baly** and J. N. **Collie.** The ultra-violet absorption spectra of benzene and of some of its mono-substituted derivatives were described. It has been found that benzene presents seven separate absorption bands, and it was shown how the formation of these may be accounted for by attributing each one to a separate and distinct process of dynamic isomerism connected with the linkage changes within the benzene molecule. A similar explanation of the absorption spectra of benzene mono-substituted derivatives was given.—The ultra-violet absorption spectra of aromatic compounds, part ii., the phenols: E. C. C. **Baly** and E. K. **Ewbank.** The absorption band produced by the dynamic isomerism existing in solutions of acetylacetone and similar tautomeric substances of the aliphatic series occupies very nearly the same position as the band given by phenol. The existence of a similar type of dynamic isomerism in the case of phenol is suggested as explaining the difference between the spectra of phenol and its ethers.—Association in mixed solvents: G. **Barger.**—Synthesis of substances allied to epinephrine: G. **Barger** and H. A. D. **Jowett.** The authors have attempted to synthesise a compound having the formula



proposed by one of them (*Journ. Chem. Soc.*, 1904, lxxxv., 192) for epinephrine, but although the methylene and dimethyl ethers were prepared, the base itself could not be isolated.—The determination of melting points at low temperatures: L. F. **Guttmann.** A method has been worked out for readily determining melting points at low temperatures (−142° to −55° is the range so far used) by means of a constantan-copper couple connected to a delicate galvanometer.—The action of water on diazo-salts, a preliminary note: J. C. **Cain** and G. M. **Norman.** One of the authors has shown that little or no hydroxy-compound is obtained by boiling certain ortho-substituted diazo-salts of the diphenyl series with dilute acids. A number of similarly substituted compounds which are said not to yield phenols on boiling with water or acids have now been examined.—A precise method of estimating the organic nitrogen in potable waters: J. C. **Brown.** The process consists in distillation to dryness of a mixture of a portion, without previous evaporation, with potassium hydroxide and potassium permanganate. The ammonia evolved is estimated by Nessler's solution.—Synthesis of 1 : 1-dimethyl-Δ^3-tetrahydrobenzene: A. W. **Crossley** and Miss N. **Renouf.**—Bromine in solutions of potassium bromide: F. P. **Worley.**—The solubility of bromine in aqueous solutions of potassium bromide has been determined over a wide range of concentrations at 18°·5 and 26°·5. There are indications that with the higher concentration of bromine, compounds more highly brominated than KBr_3 are produced.—Tetramethylammonium hydroxide: J. **Walker** and J. **Johnston.** A solution of tetramethylammonium hydroxide is readily prepared by mixing alcoholic solutions of tetramethylammonium chloride and potassium hydroxide.—Tetrethylsuccinic acid: J. **Walker** and Mrs. A. P. **Walker.**—The ultra-violet absorption spectra of aromatic compounds, part iii., disubstituted derivatives of benzene: E. C. C. **Baly** and E. K. **Ewbank.**—Studies in chlorination, ii., the action of chlorine on boiling toluene, preliminary notice: J. B. **Cohen,** H. M. **Dawson,** and P. F. **Crosland.** The results show that, under the conditions of the experiments, electrolytic chlorine enters the nucleus only, and also that the rate of chlorination appears to be more rapid than with ordinary chlorine evolved from pyrolusite and hydrochloric acid.—Purpurogallin: A. G. **Perkin.** A description of various derivatives is given.—The electrolytic oxidation of hydroxybenzoic acids: A. G. **Perkin** and F. M. **Perkin.**

PARIS.

Academy of Sciences, June 26.—M. Troost in the chair.—On a determination of the constant of aberration by means of observations of three stars very close to the pole: H. **Renan** and W. **Ebert.** Arising from researches on the determination of latitude and of the absolute coordinates of the circumpolar stars, a long series of accurate observations has become available for the calculation of the constant of aberration. An advantage of this method is that no correction is necessary for the variation of latitude. The final value obtained is 20″·434, with a probable error of 0·030s.—On isothermal surfaces: L. **Raffy.**—The motion of the earth and the velocity of light: M. **Brillouin.** An analysis of the method proposed by M. Wien and M. Schweitzer for solving the problem as to whether the ether is carried on by the earth, in which the author shows that the desired result will not be attained.—An apparatus for controlling actions produced at a distance by means of electric waves: Édouard **Branly.** An account of alterations in an apparatus already described, the chief improvement being the substitution of an electric motor for the clockwork movement.—On the specific inductive power of metals: André **Broca.** In a preceding note the author, with M. Turchini, has shown that the experimental results are not in accord with the theory for the resistance of fine metallic wires for continuous currents and alternating high frequency currents, the calculations being carried out according to Lord Kelvin's hypothesis. In the present note it is shown that the introduction of the specific inductive power, neglected in the first calculations, will account for the observed differences.—On the phenomena of the singing arc: A. **Blondel.**—An apparatus and method for measuring coefficients of magnetisation: Georges **Meslin.** A modification of the arrangement proposed by MM. Curie and Chenéveau.—The hydrolysis of very concentrated solutions of ferric sulphate: A. **Recoura.** A concentrated solution of ferric sulphate in a well closed vessel becomes slowly converted into a solid basic sulphate and a soluble acid sulphate. From the time required for this change the author regards this action as not due to a simple hydrolysis, but as due to a molecular transformation.—Combinations of aluminium chloride with carbonyl chloride: E. **Baud.** Three compounds of these substances are shown to exist, containing aluminium chloride and carbonyl chloride in the following molecular ratios, 1 : 5, 1 : 3, and 2 : 1. The last is found in commercial aluminium chloride.—The constitution and properties of steels containing tin, titanium, and cobalt: Léon **Guillet.** These metals enter into solution in the iron, the carbon being in the form of carbide. The mechanical properties of these steels are such as to prevent their commercial application.—On the reduction of aldoximes: A. **Mailhe.** Aldoximes can be readily reduced to amines by the Sabatier and Senderens reaction, but the primary amine is not the only product. Acetaldoxime gave a mixture of the primary, secondary, and tertiary amines, and œnanthaldoxime behaved similarly; owing to the decomposing action of the reduced nickel on benzaldoxime the reduction of this compound was irregular.—On the bromination of paraldehyde: P. **Freundler.** At a low temperature bromoacetaldehyde can be obtained; under different conditions tetrabromobutyric aldehyde is produced.—On some new β-ketoaldehydes: F. **Couturier** and G. **Vignon.**—The iodomercurates and chloroiodomercurate of monomethylamine: Maurice **François.**—On some derivatives of butyroine and capronoine: L. **Bouveault** and René **Locquin.**—On a bivalent phytosterine alcohol: T. **Klobb.** This alcohol, described in a previous paper under the name of arnisterine, a neutral crystalline principle extracted from *Arnica montana,* has now been shown by its reactions with acetic anhydride, benzoyl chloride, and phenyl isocyanate to be an alcohol containing two hydroxyl groups, and it is proposed to revise the name to arnidiol.—A method for determining the purity of cocoa butter: E. **Milliau.**—The toxicology of mercury-phenyl: E. **Louise** and F. **Moutier.** This substance proves to be only very slightly toxic in comparison with the corresponding compounds of the fatty series.—On the combustion of sulphur in the calorimetric bomb: H. **Giran.** In a preceding paper the author has attributed the variation of the heat

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of combustion of sulphur with pressure to the formation of persulphuric acid, but calorimetric determinations carried out with this substance show that this view is incorrect. The effects observed are due to the presence of traces of hydrogen and nitrogen in the compressed oxygen employed.—Oxyhæmoglobin from the guinea-pig, and its reaction with fluorides: M. **Piettre** and A. **Vila.**—On the simultaneous variations of the organic acids in some plants: G. **André.**—On the production of a soft cider: G. **Warcollier.** The must prepared for fermentation is freed as far as possible from oxygen, and the fermenting liquid is protected from the air during the process.—The genus Alabes of Cuvier: Léon **Vaillant.**—The physiological signification of the urate cells in solitary honey-bearing insects: L. **Semichon.**—The hæmolytic action and general toxicity of eel serum for the marmot: L. **Camus** and E. **Gley.**—On the presence of poison in the eggs of the viper: C. **Phisalix.** At the moment of ovogenesis in the viper the active principles of the venom accumulate in the ovules, and probably play a part in the development.—On the problem of statical work: Ernest **Solvay.**—The treatment of cutaneous cancer by radium: Jules **Rehns** and Paul **Salmon.** A description of two cases in which radium was used with successful results.—On the existence of a remarkable Pliocene layer at Tetouan, Morocco: Louis **Gentil** and A. **Boistel.**—On the origin of eoliths: Marcellin **Boule.**—The drawings of the lion and cave bear and of the *Rhinoceros tichorhinus* on the walls of caves by man in the reindeer epoch: MM. **Capitan, Breuil,** and **Peyrony.**

GÖTTINGEN

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical section), parts i. and ii. for 1905, contains the following memoirs communicated to the society:—

February 11.—O. **Wallach**: Researches from the university chemical laboratory, xiv.:—(1) on the constituents of the sage-oils; (2) on the proportion of phellandrene in the ethereal oil of *Schinus molle*, L.; (3) on the occurrence of an alcohol with the properties of pinocarveol in the ethereal oil of *Eucalyptus globulus*; (4) on the semicarbazone of *d*- and *l*-fenchone, and the occurrence of *l*-borneol ester in Thuja-oil; (5) on the preparation and behaviour of methyl(1)-phenyl(2)-hexene; (6) on the bromine-substitution-products of cyclohexanone and cyclopentanone.

January 28.—A. **von Koenen**: On the underground effects of earth-pressure in salt-mines.

February 2.—Dr. H. **Schering**: Seismic records at Göttingen in the year 1904.

February 11.—W. **Blitz**: Further contributions to the theory of tinctorial processes. (1) Measurements relating to the formation of inorganic analogues of substantive dyes; (2) on the "affinity of condition" of certain sulphuretted dye-stuffs.

February 25.—W. **Nernst** and H. **von Wartenberg**: On the dissociation of water-vapour. W. **Nernst** and H. **von Wartenberg**: On the dissociation of carbonic anhydride. E. **Wiechert**: Remarks on the motion of electrons with velocities exceeding that of light. C. **Carathéodory**: On the general problem of the calculus of variations. L. **Maurer**: On the differential equations of mechanics. M. **Laue**: On the propagation of radiation in dispersive and absorptive media. T. **Tamaru**: Determination of the piezoelectric constants of crystallised tartaric acid. (1) General sketch of theory and method of observation; (2) pressure arrangements and the piezoelectric excitation; (3) electrometric methods; (4) results. D. **Hilbert**: Contributions to the calculus of variations.

NEW SOUTH WALES.

Royal Society, May 3.—Prof. Liversidge, F.R.S., vice-president, in the chair.—On the occurrence of calcium oxalate in the barks of the Eucalypts: Henry G. **Smith.** The author announces the presence, in large quantities, of calcium oxalate in the barks of several species of Eucalyptus. It is similar in form and appearance in all species, being well defined monoclinic crystals in stout microscopic prisms, averaging 0·0174 mm. in length and 0·0077 mm. in breadth, and containing one molecule of water. A peculiarity of these is the tendency to form twins geniculate in appearance, twinned forms being pronounced in some species. From botanical and chemical evidence it is assumed that *Eucalyptus salmonophloia* of West Australia and *E. oleosa* of New South Wales belong to the same species, and that the latter tree, which most often occurs as a "mallee," is only the degenerate stage of the former. The theory is advanced that some of the "mallees," or shrubby Eucalypts, have been formed through the poisoning effect of the excess of oxalic acid acting for a long time upon species which originally grew as large trees. The tannins in those Eucalyptus barks containing a large amount of calcium oxalate are of very good quality, light in colour, astringent, easily soluble, and should make leather of good quality. On evaporating the extract to dryness on the water bath but little darkening takes place, and the product is still readily soluble. This class of Eucalyptus barks should, therefore, make excellent tanning extracts. From the bark residue the calcium oxalate should be profitably extracted, and the oxalic acid obtained cheaply from this, practically as a by-product. The air-dried bark of *Eucalyptus salubris*, the "gimlet" of West Australia, gives 30·5 per cent. of total extract and 18·6 per cent. of tannin absorbed by hide powder, and contains 16 per cent. of calcium oxalate. The bark of *Eucalyptus gracilis* contains 16·66 per cent. of calcium oxalate, that of *E. Behriana* 16·5 per cent., of *E. oleosa* 10·64 per cent., of *E. dumosa* 9·8 per cent., and of *E. salmonophloia* 8·34 per cent. The barks of all the Eucalypts tested contain calcium oxalate, although in some species in very small amount.—Notes of astronomical interest, dealing with the past eighteen months, showing the progress and deductions made during that period: H. A. **Lenehan.**

DUBLIN.

Royal Irish Academy, May 22.—Prof. R. Atkinson, president, in the chair.—On the vegetation of the southern part of county Dublin: G. H. **Pethybridge** and R. Lloyd **Praeger.** The paper dealt with the plant associations of this area, which extends from sea-level to nearly 2500 feet, and embraces more than 200 square miles. A coloured vegetation map and photographs were shown in illustration of the subject.

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